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<u>L5</u>	L1 and (network\$6 or lan or local area network\$6 or wan or wide area network\$6 or database cabl\$3 or twist\$3 same pair\$ or link\$6 or telephone or modem or modulat\$6 or demodulat\$6)	1	<u>L5</u>
<u>L4</u>	L1 and (storage or stor\$3) same device	1	<u>L4</u>
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<u>L2</u>	L1 and (network\$6 or lan or local area network\$6 or wan or wide area network\$6 or database)	0	<u>L2</u>
<u>L1</u>	5683243.pn.	1	<u>L1</u>

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<u>L4</u>	L1 and (storage or stor\$3) same device	1	<u>L4</u>
<u>L3</u>	L1 and (manipulat\$6 or browser or point\$3)	1	<u>L3</u>
<u>L2</u>	L1 and (network\$6 or lan or local area network\$6 or wan or wide area network\$6 or database)	0	<u>L2</u>
<u>L1</u>	5683243.pn.	1	<u>L1</u>

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<u>L3</u>	L1 and (manipulat\$6 or browser or point\$3)	1	<u>L3</u>
<u>L2</u>	L1 and (network\$6 or lan or local area network\$6 or wan or wide area network\$6 or database)	0	<u>L2</u>
<u>L1</u>	5683243.pn.	1	<u>L1</u>

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L4: Entry 1 of 1

File: USPT

Nov 4, 1997

DOCUMENT-IDENTIFIER: US 5683243 A

\*\* See image for Certificate of Correction \*\*

TITLE: Custom orthodontic appliance forming apparatus

US Patent No. (1):

5683243

Detailed Description Text (43):

The input computer 30 has connected thereto a pointing device which may be a mouse 47a or, as shown, a mouse equipped digitizer board 47. The camera 44 produces a graphics image display 48 on the screen 35 of the computer 30, which an operator 28 may align with the assistance of a positioning grid G (FIG. 4A). With the digitizer 47, the operator selects points by positioning a cursor 48a on the screen 35 with the mouse 47a. The selection results in the storage of X, Y coordinate data for each of the points selected. The points selected, in the description of the preferred process below, correspond to preselected boundary points of the teeth and, from the mandibular model 21, the lower jaw. From these top view boundary points, tooth and mandibular jaw dimensions are calculated. The calculated dimensions are used in analysis steps to calculate equations for the mandibular bone structure or mandibular trough MT and to calculate from the trough equation and the calculated horizontal dimensions and relative positions of features on individual teeth the finish positions of the teeth.

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L5: Entry 1 of 1

File: USPT

Nov 4, 1997

DOCUMENT-IDENTIFIER: US 5683243 A

\*\* See image for Certificate of Correction \*\*

TITLE: Custom orthodontic appliance forming apparatus

US Patent No. (1):  
5683243

Detailed Description Text (29):

✓ In embodiments where some or all of the extraction of the digitized anatomical information 26 from the model 20, which may also be derived directly from the mouth 18 of the patient 12, is accomplished by the orthodontist 14 at the orthodontist's office 11, the information 26 is digitized by the orthodontist 14 then transmitted as part of the information 16 to the appliance design center 13. The transmitted information 16 is preferably transmitted from the orthodontist's office 11 to the appliance facility 13 by modem, but may be transmitted in any other available manner.

Detailed Description Text (51):

The probe assembly 57 further includes a magnetic base 59 upon which is mounted the model 20, and from which extends an upstanding vertical support 58 on which the probe 60 is mounted. The probe tip 60a is freely rotatable about a vertical axis on which its tip lies, while the probe itself is hooked to allow the tip to track recesses in the surfaces of the teeth of the model 21. The probe 60 is mounted on the support 58 to move in X and Y directions in a vertical plane preferably that extends through the support 58 and the probe 60. In this manner, the probe tip 60a is positioned to scan the surface of a tooth of the model 21 along this plane. The probe 60 is linked to the support 58 through a pair of orthogonal measurement position transducers 61, which respectively generate electrical analog measurements of the positions of the tip of the probe 60 along respective ones of the X-Y orthogonal coordinates. The outputs of the transducers 61 are connected to circuitry that generates a sequence of periodic readings of the transducer measurements of the probe tip positions which are then digitized. These outputs are sent in along lines 61a connected to input computer 30, preferably to a serial port thereof.

Detailed Description Text (60):

At the remote end of the moveable arm 77 is a slot cutter assembly 77a, drivably linked to the motor 75. The assembly 77a has extending downwardly therefrom a rotatable cutter blade drive shaft 77b, which has fixed to the lower end thereof a circular slot cutter blade 77c. The blade 77c lies in the horizontal X-Y plane and is of the thickness of the slot needed for the thickness of archwire selected. The archwires are typically rectangular in cross-section so that they are able to exert torque on the bracket, which accordingly will be provided by the saw blade 77c with a slot of rectangular cross-section. The base of the slot will be cut, in accordance with the command signals from the computer 30c, at an angle in the X-Y plane of the machine 39 that is tangent to the final curve of the archwire that it will receive. The base of the slot will be convex to accommodate the curve of the wire in the horizontal plane. The base of the slot will be convex to accommodate the curve of the wire in the horizontal plane. The inclination of the bracket slot is achieved by the angle of the support 73 in response to control signals from the computer 30c. The computer 30c is programmed to account for changes in elevation of the bracket 80 due to the offset of the brackets from the support axis of rotation 73a.

Detailed Description Text (182):

✓ In alternative configurations, information may be sent from the design computer 30b in machine readable form, for example by diskette 34 or modem, to a manufacturing computer

30c to which is attached one or more of the appliance component manufacturing machines  
38.